National Institute of Environmental Health Sciences

Climate change increases the risk of malaria in birds

Author(s): Garamszegi LZ
Year: 2011
Journal: Global Change Biology. 17 (5): 1751-1759

Abstract:

Malaria caused by Plasmodium parasites is one of the worst scourges of mankind and threatens wild animal populations. Therefore, identifying mechanisms that mediate the spread of the disease is crucial for both human health and conservation. Human-induced climate change has been hypothesized to alter the geographic distribution of malaria pathogens. As the earth warms, arthropod vectors may display a general range expansion or may enjoy longer breeding season, both of which can enhance parasite transmission. Moreover, Plasmodium species may directly benefit for elevating temperatures, which provide stimulating conditions for parasite reproduction. To test for the link between climate change and malaria prevalence on a global scale for the first time, I used long-term records on avian malaria, which is a key model for studying the dynamics of naturally occurring malarial infections. Following the variation in parasite prevalence in more than 3000 bird species over seven decades, I show that the infection rate by Plasmodium is strongly associated with temperature anomalies and has been augmented with accelerating tendency during the last 20 years. The impact of climate change on malaria prevalence varies across continents, with the strongest effects found for Europe and Africa. Migration habit did not predict susceptibility to the escalating parasite pressure by Plasmodium. Consequently, wild birds are at an increasing risk of malaria infection due to recent climate change, which can endanger both naive bird populations and domesticated animals. The prevailing avian example may provide useful lessons for understanding the effect of climate change on malaria in humans.

Source: http://dx.doi.org/10.1111/j.1365-2486.2010.02346.x

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Temperature

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Global or Unspecified

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: Malaria

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Exposure Change Prediction, Methodology

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Historical

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content